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THREADING
DISLOCATION

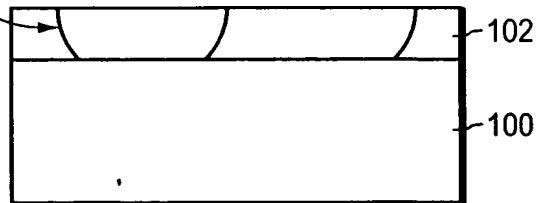


FIG. 1A

1. DEPOSIT LATTICE MISMATCHED
LAYER AT LOW T

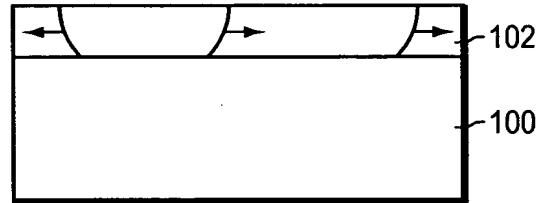


FIG. 1B

4. REPEAT ANNEAL AND
DEPOSITION UNTIL DESIRED
STRUCTURE IS ACHIEVED

2. ANNEAL AT HIGH T TO INCREASE
DISLOCATION FLOW AND REDUCE
DISLOCATION DENSITY

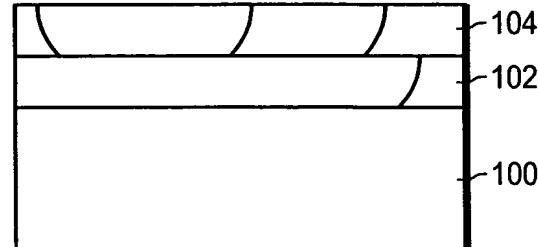


FIG. 1C

3. DEPOSIT SUBSEQUENT LAYER
WITH INCREASED LATTICE
MISMATCHED AT LOW T

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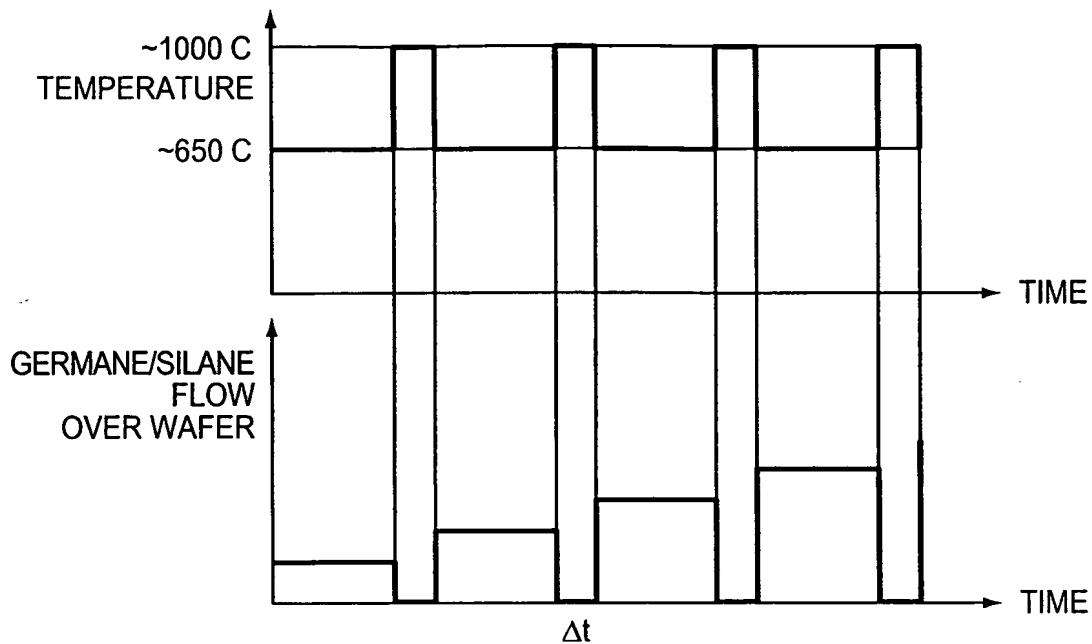


FIG. 2

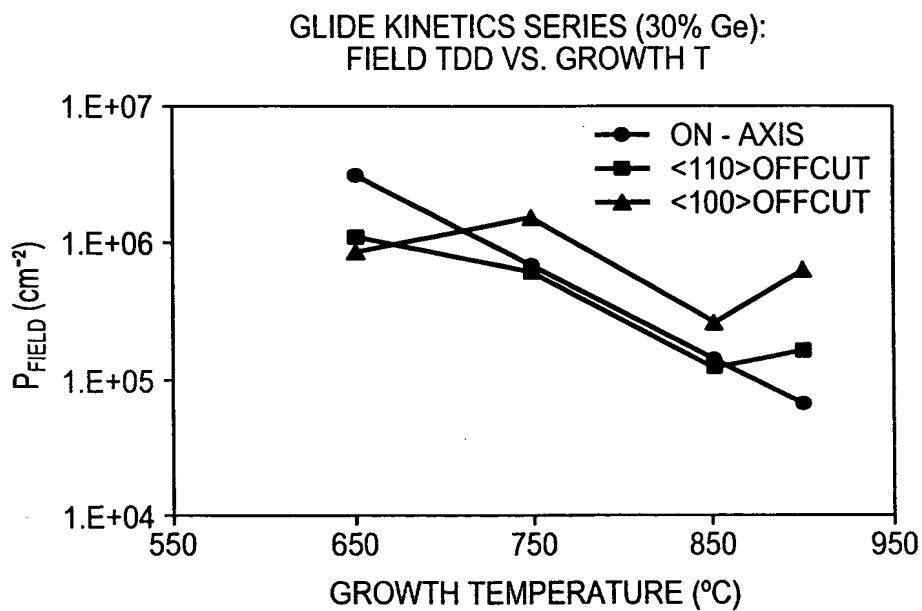


FIG. 3

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CHANGE IN EFFECTIVE STRAIN TO FIT DATA

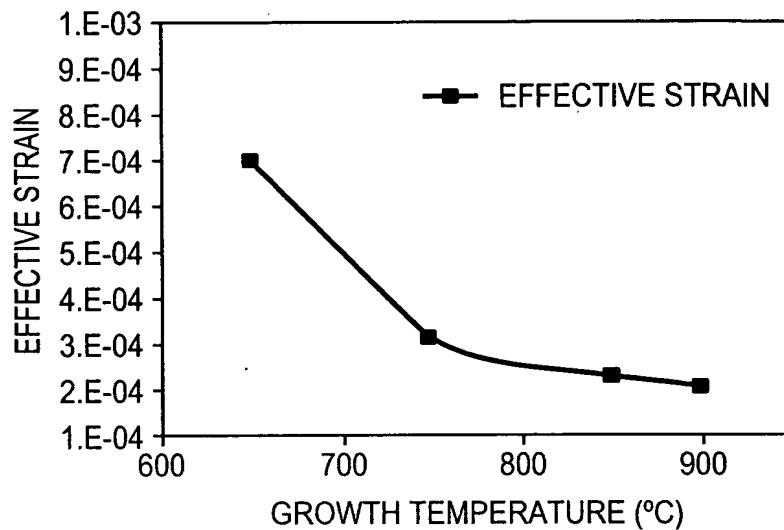


FIG. 4

SAMPLE	TOTAL THREADING DISLOCATION DENSITY (# / cm ²)	FIELD THREADING DISLOCATION DENSITY (# / cm ²)
20% SiGe ON Si WITH GRADED BUFFER AS GROWN	1.36×10^6	1.31×10^6
20% SiGe ON Si WITH GRADED BUFFER AFTER A 5 MIN ANNEAL AT 1050 °C	7.25×10^5	5.48×10^5

FIG. 5

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